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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,062	09/09/2003	Takashi Motoyoshi	52433/740	4063

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NEW YORK, NY 10004

EXAMINER
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IP, SIKYIN

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/658,062	<b>Applicant(s)</b> MOTOYOSHI ET AL.	
	<b>Examiner</b> Sikyln Ip	<b>Art Unit</b> 1742	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/25/05;3/28/06.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4,6 and 8-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-4,6,8-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-4, 6, and 8-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The expressions "not more than 0.5% Cr" and "not more than 0.5% Mo" in claims 1-4 are not supported by the specification as originally filed. Specification as originally filed supports Cr and Mo as optional elements. However, when Cr and/or Mo are added to the claimed steel, Cr needs to be 0.005 to 0.5 wt.% and Mo needs to be 0.1 to 0.5 wt.% (page 4, lines 19-22). The expression "no more than 0.5% Cr" has introduced range of greater than zero to less than 0.005 wt.% as a new matter. The same reason applies to claim 16. The expression "no more than 0.5% Mo" has introduced range of greater than zero to less than 0.1 wt.% as a new matter.

A response filed by applicants dated March 28, 2006 has not provided support for the new ranges.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 6, and 8-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-4 are indefinite because Si content has two ranges. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. In the present instance, claims 1-4 recites the broad recitation of Si amount ( $Mn/8 - 0.07$ ) to ( $Mn/8 + 0.07$ ), and the claim also recites 0.10 to 0.30 which is the narrower statement of the range/limitation.

Claim 14 is indefinite because the expression "the prior austenite grain size number" has no antecedent basis.

### ***Specification***

The disclosure is objected to because of the following informalities: Page 3, line 17; page 4, line 8; page 6, line 30; page 7, line 14, 16, 18, and 21; and page 11, line 34 of instant specification refer to the claims for support which is found improper because claims would be amended/deleted during examination.

Appropriate correction is required.

## **Claim Rejections - 35 USC § 103**

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 6, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 6-179945.

The English abstract of JP'945 discloses a electric welded steel pipe for reinforcing motor car doors having an alloy with constituents whose wt% ranges overlap those recited by claims. Moreover, prior art tensile strength (TS) of 150 to 180Kgf/m<sup>2</sup> (equivalent 1471 to 1765.26MPa) and yield ratio(YR) of 70 to 85% overlaps with the TS range of 1700 MPA or more, and YR of 72% or less, respectively recited by claim 1. In any event, the overlap in alloy and property ranges establishes a prima facie case of obviousness because it would be obvious to one of ordinary skill in the art to select the

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claimed ranges from the broader disclosure of the prior art since the prior art has the same utility and similar properties, see MPEP 2144.05.

In regard to composition, alloy 2 in table 1 on page 5 of JP'945 meets the composition recited by claims 7 and 8 and when calculated.

Even though dislocation density recited by claim 6 is not taught by prior art, such property would be expected since prior art teaches hot and cold working and quenching which creates dislocations, and also similar properties are obtained, and in absence of proof to the contrary.

The English abstract of JP'945 teaches a steel pipe having a microstructure containing martensite produced by normalizing comprising the steps of heating at austenitic temperature and cooling.

In regard to claim 10, prior art in the English translation, paragraph 8 teaches pipe can be square shape or a variant steel pipe.

JP '945 has Mn content 0.4 wt.% higher than the claimed 1.60 wt.% Mn. However, it is well settled that a prima facie case of obviousness would exist where the claimed ranges and prior art do not overlap but are close enough that one ordinary skilled in the art would have expected them to have the same properties, *In re Titanium Metals Corporation of America v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *In re Woodruff*, 16 USPQ 2d 1934, *In re Hoch*, 428 F.2d 1341, 166 USPQ 406 (CCPA 1970), and *In re Payne* 606 F.2d 303, 203 USPQ 245 (CCPA 1979). To overcome the prima facie case, an applicant must show that there are substantial, actual differences

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between the properties of the claimed compound and the prior art compound. In re Hoch, 428 F.2d 1343-44, 166 USPQ 406 at 409.

Claims 1-4, 6, and 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al (US Patent 5,374,322).

Okada discloses martensitic steel composition (abstract), tensile strength at least 120 kgf/mm<sup>2</sup> and yield ratio less than 75% (col. 2, lines 3-5), and cooling rate (col. 9, lines 3-56). Cooling rate is determined as function of microstructure (col. 9, lines 8-15) and thickness of steel plate (col. 9, lines 16-22). Cooling medium includes air, mist, shower, forced air, water quenching, or combination (col. 9, lines 45-56).

Okada discloses high tensile strength (TS) and low yield ratio (YR) martensitic steel welded pipes which meet the property limitations recited by claims 1 and 2. See examples in Tables 1 and 2: B1 having a TS 176Kg/mm<sup>2</sup> (1726MPa) and YR of 0.64 ; B6 having TS 183kg/mm<sup>2</sup> (1794.7MPa) and YR of 0.62; and B8 having TS of 185 (1814.3MPa) and YR of 0.62.

Okada discloses specific example B8 in Tables 1 and 2 having a Si content of 0.26% which falls within the equation range calculated at 0.17 to 0.31%, and has a tensile strength of 185kg/mm<sup>2</sup> (1814.3MPa) .

Even though dislocation density recited by claim 6 is not taught by prior art, such property would be expected since prior art teach hot and cold working which creates dislocations, and similar properties are obtained, and in absence of proof to the contrary.

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In regard to claim 9, Okada on lines 31 to 42 of column 10 discloses induction heating at austenitic temperature followed by cooling. Even though prior art does not teach a prior austenite grain size number of 6 or more as claim 14, such would be expected since composition, process, and process limitations are closely met, and in absence of proof to the contrary.

Okada discloses electric resistance welded pipe which would include round or square sectional shape recited by claim 10.

Okada discloses electric-resistant welded pipes B10 in Tables 1 and 2 having composition and properties that closely meet claims 3 and 4. Note B10 has a TS of 210kg/mm<sup>2</sup> (2059.47MPa) and is within the TS of 1,900MPa recited by claim 3 and 2,000MPa recited by claim 4. Although B10 has a yield ratio of 85% which is higher than the 68% or less recited by claim 3 and 66% or less recited by claim 4, such would not be a patentable difference.

Okada in claim 1 of column 19 discloses a welded pipe having an alloy with constituents whose wt% ranges overlap those recited by the claims 8 and 11. The overlap in alloy wt% ranges establishes a prima facie case of obviousness because it would be obvious to one of ordinary skill in the art to select the claimed ranges from the broader disclosure of the prior art since the prior art has similar utility and properties, see MPEP 2144.05.

Also similar to method claims 11 to 13, Okada in Table 2 and lines 31 to 44 makes steel pipe by hot rolling, forming pipe with ERW process, induction heating and cooling. Even though prior art cools with air whereas the present invention cools with water at



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a higher rate, such would not be a patentable difference since water has not been excluded as a cooling medium (col. 9, lines 45-56). Also applicant has not demonstrated (e.g. by comparative test data) that cooling rate is somehow critical and productive of new and unexpected results.

Okada has Cr content 0.5 wt.% higher than the claimed 0.50 wt.% Cr. However, it is well settled that a prima facie case of obviousness would exist where the claimed ranges and prior art do not overlap but are close enough that one ordinary skilled in the art would have expected them to have the same properties, *In re Titanium Metals Corporation of America v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *In re Woodruff*, 16 USPQ 2d 1934, *In re Hoch*, 428 F.2d 1341, 166 USPQ 406 (CCPA 1970), and *In re Payne* 606 F.2d 303, 203 USPQ 245 (CCPA 1979). To overcome the prima facie case, an applicant must show that there are substantial, actual differences between the properties of the claimed compound and the prior art compound. *In re Hoch*, 428 F.2d 1343-44, 166 USPQ 406 at 409.

### ***Response to Arguments***

Applicant's arguments filed November 25, 2005 have been fully considered but they are not persuasive.

Applicants argue that the examples of cited references fail to show the claimed invention. Assuming arguendo that examples of cited references do not disclose the identical invention, but examples are given by way of illustration not by way of limitation. Moreover, there is no factual evidence that the claimed compositions are critical and possess unexpected results.

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Applicants' argument of Mo content with respect to JP '945 is noted. But, JP '945 discloses Mo 0.1 to 1.5 wt.% (abstract) which overlaps the recited not more than 0.5 wt.%.

Applicants argue that cited references do not disclose the claimed compositions. But, applicants have not shown that the Mn and Cr contents are critical.

Applicants argue that JP '945 and US '322 teaches air cooling not water quenching. But claims rejected by JP '945 do not require water quenching. Water quenching is not exclude by US '322 (col. 9, lines 53-56).

Applicants argue that JP '945 and US '322 do not suggest combination of steel pipe and tensile strength. Applicants' attention is directed to abstract of JP '945 below

has a tensile strength of 150-180 kgf/mm<sup>2</sup>, elongation of at least 10%, and yield ratio of 0.70-0.85. The pipe 1471 - 175.26 MPA

which teaches tensile strength and yield ratio anticipated the instant claim 1. US '322

5,374,322

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discloses 5 the resistance to impact of the steel member and to further increase its strength so as to decrease the weight of the member, it is necessary to achieve a T. S. of 120 kgf/mm<sup>2</sup> or more and a yield ratio (yield strength/tensile strength) of 75% or less. However, such levels tensile strength at least 120 kgf/mm<sup>2</sup> and yield ratio 75% or less.

Applicants' argument with respect to JP '945 in pages 17-22 of instant remarks is noted. But, claims rejected by said reference do not require water quenching. Claimed tensile strength and yield ratio in claim 1 have been disclosed

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The pipe has a tensile strength of 150-180 kgf/mm<sup>2</sup>, elongation of at least 10%, and yield ratio of 0.70-0.85. 1471 - 1765.26 MPA

).

Applicants' argument with respect to US '322 in pages 23-28 of instant remarks is noted. But, claimed tensile strength and yield ratio have been taught

5,374,322

2

the resistance to impact of the steel member and to further increase its strength so as to decrease the weight of the member, it is necessary to achieve a T. S. of 120 kgf/mm<sup>2</sup> or more and a yield ratio (yield strength/tensile strength) of 75% or less. However, such levels

With respect to instant recited water quenching, it is not excluded by US '322

5,374,322

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ing, water quenching is not excluded from the present invention as long as the bainite index or the cooling rate (R is within the range of the present invention. 55).

Applicants' argument in page 29, first full paragraph is noted. But, martensite of cited references, for example, US '322 is also formed by quenching

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degradation in toughness and easy occurrence of quenching cracks.

(Cooling Rate)

Restrictions on the cooling rate are introduced so as to make quenching achievable by air cooling without resulting in bends. The restrictions on the cooling rate are defined by the before-mentioned Equation (3). 5

According to the cooling conditions of the present invention, a martensite + bainite complex structure predominantly comprising martensite with a satisfactory level of strength and toughness and a yield ratio of 0.75 or less can be obtained. When the cooling rate is outside the range of the present invention, the desired effects mentioned above cannot be obtained. 10 15

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## Conclusion

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The above rejection relies on the reference(s) for all the teachings expressed in the text(s) of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the text(s) of the reference(s). To emphasize certain aspect(s) of the prior art, only specific portion(s) of the text(s) have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combination of the cited references may be relied on in future rejection(s) in view of amendment(s).

All recited limitations in the instant claims have been met by the rejections as set forth above.

Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121; 37 C.F.R. Part §41.37 (c)(1)(v); MPEP §714.02; and MPEP §2411.01(B).

## Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (571) 272-1241. The examiner can normally be reached on Monday to Friday from 5:30 A.M. to 2:00 P.M.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King, can be reached on (571)-272-1244.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
SIKYIN IP  
PRIMARY EXAMINER  
ART UNIT 1742

S. Ip  
June 12, 2006